

Amendments to the Claims:

This listing of the claims will replace all prior versions, and listings, of the claims in the application:

Listing of the Claims:

1. (Currently Amended) A method for determining a cross sectional dimension of a measured structural element having a sub-micron cross section, the cross sectional dimension defining an intermediate section of the measured structural element that is located between first and second traverse sections of the measured structural element, the method comprising the steps of:

scanning, while an inspection tool is in a first tilt state, a reference structural element and at least the first traverse section of the measured structural element, to determine a first distance between a certain point of the reference structural element and the first traverse section, wherein the first traverse section represents a first edge of the measured structural element;

determining whether additional scanning is required based on one or more of an estimated width of the first traverse section and an estimated width of the second traverse section;

if the additional scanning is required, scanning, while the inspection tool is in a second tilt state, the reference structural element and at least the second traverse section of the measured structural element, to determine a second distance between the certain point of the reference structural element and the second traverse section, wherein the second traverse section represents a second edge of the measured structural element; and

determining a cross sectional dimension of the intermediate section of the measured structural element in response to at least the first distance and second distances, wherein the cross sectional dimension is located between the first and second traverse sections of the measured structural element.

2. (Cancelled)

3. (Previously Presented) The method of claim 1 wherein the first edge of the measured structural element and the certain point of the reference structural element are substantially located on a same plane.
4. (Original) The method of claim 1 wherein a height of the certain point of the reference structural element is much smaller than a height of the measured structural element.
5. (Previously Presented) The method of claim 1 further comprising a preliminary step of generating the reference structural element at a vicinity of the measured structural element.
6. (Previously Presented) The method of claim 1 wherein during the scanning, while the inspection tool is in the first tilt stage, a measurement angle defined between a measured object that includes the measured structural element and an electron beam that scans the measured structural element is substantially ninety degrees.
7. (Previously Presented) The method of claim 1 wherein at least one additional reference structural element is provided at a vicinity of the reference structural element and wherein the steps of scanning further comprise scanning the at least one additional reference structural element to provide at least a third distance, in addition to the first and second distances, between the at least one additional reference structural element and a traverse section of the measured structural element.
8. (Previously Presented) The method of claim 7 wherein the step of determining is further responsive to the third distance.
9. (Cancelled)
10. (Currently Amended) The method of claim 9-1 wherein performing the scanning, while the inspection tool is in the second tilt state, is in response to determining a feature of the first traverse section.
11. (Currently Amended) The method of claim 10 wherein the feature is ~~an~~ the estimated width or an estimated orientation of the first traverse section.

12. (Previously Presented) The method of claim 11 wherein the orientation is estimated by comparing detection signals generated as a result of a scan of the first traverse section and detection signals generated as a result of at least one scan of another traverse section of known width.

13. (Currently Amended) The method of claim 9-1 wherein at least one additional reference structural element is provided at a vicinity of the reference structural element and wherein the steps of scanning further comprise scanning the at least one additional reference structural element to provide at least a third distance, in addition to the first and second distances, between the at least one additional reference structural element and a traverse section of the measured structural element.

14 (Currently Amended) The method of claim 13 wherein the step of determining the cross sectional dimension is further responsive to the third distance.

15. (Currently Amended) A method for determining a cross sectional dimension of a measured structural element having a sub-micron cross section, the cross sectional dimension defining an intermediate section of the measured structural element that is located between first and second traverse sections of the measured structural element, the method comprising the steps of:

scanning, while an inspection tool is in a first tilt state, at least a first point of a first reference structural element and at least the first traverse section of the measured structural element, to determine a first distance between the first reference structural element and the first traverse section, wherein the first traverse section represents a first edge of the measured structural element;

determining whether additional scanning is required based on one or more of an estimated width of the first traverse section and an estimated width of the second traverse section;

if the additional scanning is required, scanning, while the inspection tool is in a second tilt state, at least a second point of a second reference structural element and at least the second traverse section of the measured structural element, to determine a second distance between the second reference structural element and the second traverse section, wherein the second traverse

section represents a second edge of the measured structural element; and

determining a cross sectional dimension of the intermediate section of the measured structural element in response to at least the first distance~~and second distances~~, wherein the cross sectional dimension is located between the first and second traverse sections of the measured structural element.

16. (Original) The method of claim 15 wherein the measured structural element is positioned between the first and second reference structural elements.

17. (Original) The method of claim 15 further comprising a step of measuring a distance between the first and second points.

18. (Previously Presented) The method of claim 17 wherein the measured structural element is positioned between the first and second reference structural elements and wherein the step of measuring the distance comprises performing at least one scan of the first and second points and the measured structural element.

19. (Previously Presented) The method of claim 18 wherein the at least one scan comprises preventing an electron beam from illuminating the measured structural element.

20. (Previously Presented) The method of claim 15 wherein the measured structural element is a line that has a top section and two substantially opposing sidewalls.

21. (Previously Presented) The method of claim 15 wherein the measured structural element is a contact.

22. (Previously Presented) The method of claim 15 wherein the measured structural element is a recess.

23. (Previously Presented) The method of claim 15 wherein at least one additional reference structural element is provided at a vicinity of the first and second reference structural elements and wherein the steps of scanning further comprise scanning the at least one additional reference structural element to provide a third distance, in addition to the first and second distances, between the at least one additional reference structural element and a traverse section of the measured structural element.

24. (Currently Amended) The method of claim 23 wherein the step of determining the cross sectional dimension is further responsive to the third distance.
25. (Cancelled)
26. (Currently Amended) The method of claim ~~25-15~~ wherein the scanning, while the inspection tool is in the first tilt stage, comprises scanning with an electron beam that is substantially perpendicular to a measured object that includes the measured structural element.
27. (Cancelled)
28. (Currently Amended) The method of claim ~~25-15~~ wherein the determination of whether additional scanning is required is further based on ~~responsive to~~ an estimated orientation of a traverse section.
29. (Currently Amended) The method of claim ~~25-15~~ wherein the determination of whether additional scanning is required is further based on ~~responsive to~~ an estimated cross sectional dimension of the measured structural element.
30. (Currently Amended) The method of claim ~~25-15~~ wherein the determination of whether additional scanning is required is further based on ~~responsive to~~ a distance relationship between a threshold and an estimated cross sectional dimension of the measured structural element.
31. (Previously Presented) The method of claim 30 wherein the threshold is a maximal width of the measured structural element.
32. (Previously Presented) The method of claim 30 wherein the threshold is a minimal width of the measured structural element.
- 33 - 34. (Cancelled)
35. (Currently Amended) The method of claim ~~25-15~~ wherein at least one additional reference structural element is provided at a vicinity of the first and second reference structural elements and wherein the steps of scanning further comprise scanning the at least one additional reference structural element to provide a third distance, in addition to the first and second

distances, between the at least one additional reference structural element and a traverse section of the measured structural element.

36. (Currently Amended) The method of claim 35 wherein the step of determining the cross sectional dimension is further responsive to the third distance.

37. (Currently Amended) A method for determining a cross sectional dimension of a measured structural element having a sub-micron cross section, the cross sectional dimension defining an intermediate section of the measured structural element that is located between first and second traverse sections of the measured structural element, the method comprising the steps of:

scanning, while an inspection tool is in a first tilt state, first portions of a set of reference structural elements and at least the first traverse section of the measured structural element, to determine a first set of distances between first certain points of reference structural elements of the set of reference structural elements and the first traverse section, wherein the first traverse section represents a first edge of the measured structural element;

determining whether additional scanning is required based on one or more of an estimated width of the first traverse section and an estimated width of the second traverse section;

if the additional scanning is required, scanning, while the inspection tool is in a second tilt state, second portions of the set of reference structural elements and at least the second traverse section of the measured structural element, to determine a second set of distances between second certain points of reference structural elements of the set of reference structural elements and the second traverse section, wherein the second traverse section represents a second edge of the measured structural element; and

determining a cross sectional dimension of the intermediate section of the measured structural element in response to at least the first set of ~~and second~~ distances, wherein the cross sectional dimension is located between the first and second traverse sections of the measured structural element.

38. (Currently Amended) The method of claim 37 wherein the step of determining comprises statistical processing of the distances of the first set to provide ~~the~~ a first distance.

39. (Currently Amended) The method of claim 37 wherein the step of determining comprises statistical processing of the distances of the second set to provide ~~the~~ a second distance.

40. (Original) The method of claim 37 wherein the set of reference structural elements is positioned at both sides of the measured structural element.

41. (Original) The method of claim 37 wherein the set of reference structural elements is positioned at one side of the measured structural element.

42. (Currently Amended) A system for determining a cross sectional dimension of a structural element having a sub-micron cross section, the cross sectional dimension defining an intermediate section that is located between first and second traverse sections of the structural element, wherein the first traverse section represents a first edge of the measured structural element and the second traverse section represents a second edge of the measured structural element, the system comprising:

means for directing an electron beam towards an inspected object including the measured structural element so as to scan, at a first tilt state, a reference structural element and at least the first traverse section of the structural element, and to scan at a second tilt state, the reference structural element and at least the second traverse section of the structural element;

at least one detector that is positioned so as to detect electrons emitted from the measured structural element as a result of an interaction with the electron beam; and

a processor, coupled to the at least one detector and to the directing means so as to process detection signals received from the at least one detector and to:

determine whether additional scanning after the scan at the first tilt state is required based on one or more of an estimated width of the first traverse section and an estimated width of the second traverse section;

determine a first distance between a certain point of the reference structural element and the first traverse section;

if scanning at the second tilt state is performed, determine a second distance between the certain point of the reference structural element and the second traverse section; and

determine a cross sectional dimension of the intermediate section of the measured

structural element in response to at least the first ~~distance~~ and second ~~distances~~, wherein the cross sectional dimension is located between the first and second traverse sections of the measured structural element.

43. (Cancelled)

44. (Currently Amended) The system of claim 42 wherein the processor is capable of determining the cross sectional dimension in response to additional distances between the measured structural element and additional reference structural elements.

45. (Cancelled)